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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO
10/642,438	08/15/2003	Roger Moulton	SOU747/4-8US 2478	
7590 03/21/2006			EXAM	INER
Thomas W. Adams			OH, TAYLOR V	
Renner, Otto, Boiselle & Sklar, L.L.P. Nineteenth Floor			ART UNIT	PAPER NUMBER
1621 Euclid Avenue Cleveland, OH 44115			1625	
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Please find below and/or attached an Office communication concerning this application or proceeding.

		Application No.	Applicant(s)				
Office Action Summary		10/642,438	MOULTON ET AL.				
		Examiner	Art Unit				
		Taylor Victor Oh	1625				
The MAILING DATE of this communication appears on the cover sheet with the correspondence address Period for Reply							
WHIC - Exter after - If NC - Failu Any r	ORTENED STATUTORY PERIOD FOR REPLY CHEVER IS LONGER, FROM THE MAILING DANSIONS of time may be available under the provisions of 37 CFR 1.13 SIX (6) MONTHS from the mailing date of this communication. Operiod for reply is specified above, the maximum statutory period were to reply within the set or extended period for reply will, by statute, reply received by the Office later than three months after the mailing and patent term adjustment. See 37 CFR 1.704(b).	ATE OF THIS COMMUNICATE  B6(a). In no event, however, may a reply  rill apply and will expire SIX (6) MONTHS  cause the application to become ABANT	FION. be timely filed  from the mailing date of this communication.				
Status							
2a) <u></u>	Responsive to communication(s) filed on <u>21 De</u> .  This action is <b>FINAL</b> . 2b) This Since this application is in condition for allower closed in accordance with the practice under E	action is non-final.					
Dispositi	on of Claims						
5)	Claim(s) 1-59 is/are pending in the application.  4a) Of the above claim(s) 14,15,18,19 and 53-5  Claim(s) is/are allowed.  Claim(s) 1-13,16,17,20-52 and 56-59 is/are rejected to.  Claim(s) is/are objected to.  Claim(s) are subject to restriction and/or  on Papers  The specification is objected to by the Examine The drawing(s) filed on is/are: a) access  Applicant may not request that any objection to the or  Replacement drawing sheet(s) including the correction of the oath or declaration is objected to by the Examine	ected.  election requirement.  r.  epted or b) objected to by the drawing(s) be held in abeyance. on is required if the drawing(s) is	he Examiner. See 37 CFR 1.85(a). s objected to. See 37 CFR 1.121(d).				
	ınder 35 U.S.C. § 119						
12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  a) All b) Some * c) None of:  1. Certified copies of the priority documents have been received.  2. Certified copies of the priority documents have been received in Application No  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  * See the attached detailed Office action for a list of the certified copies not received.							
2) 🔲 Notice 3) 🔯 Inform	e of References Cited (PTO-892) e of Draftsperson's Patent Drawing Review (PTO-948) nation Disclosure Statement(s) (PTO-1449 or PTO/SB/08) r No(s)/Mail Date 2/28/05 & 3/21/05		nary (PTO-413) ail Date nal Patent Application (PTO-152)				

## The Status of Claims:

Claims 1-59 are pending.

Claims 1-13, 16-17,20-52, and 56-59 have been rejected.

Claims 14-15, 18-19, 53, and 54-55 have been withdrawn from consideration.

#### **DETAILED ACTION**

1. Claims 1-13, 16-17,20-52, and 56-59 are under consideration in this Office Action.

## **Priority**

2. It is noted that this application claims benefit of 60/404,178 filed on 8/16/2002; claims benefit of 60/404,202 filed on 8/16/2002.

#### **Drawings**

3. None.

#### Election/Restrictions

Applicant's election with traverse of Group I (claims 1-13, 16-17,20-52, and 56-59) on 12/21/05 is acknowledged.

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Claims 14-15, 18-19, 53, and 54-55 (Groups II-IV) are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected groups II-IV, there being no allowable generic or linking claim.

Applicants argue in the followings:

1. The mere addition of a catalyst to the ionic liquid compostion of claim 1 should not be caused these claims to be considered a different invention ;furthermore, the prior art (US4,827,072) fails to support the examiner's contention; moreover, Group II (14-15, 18-19) does not stand alone, but linked to the claim 1.

In response to applicants' argument regarding the restriction, regardless of depending on the independent claim, there are two distinct, unrelated, different classes ,which are a liquid composition and a catalyst containing the ionic liquid. There is no relation between them. The search is a burden since they are unrelated to each other even though applicants think that they are linked together as in the claims.

In addition, regarding the prior art (US4,827,072), on the contrary to applicants' argument, the invention of Group II can be practiced with another materially different product as shown in Imai et al. (US 4,827,072), in which dehydrogenation catalyst containing a platinum group metal has been used for dehydrogenation process, which is not involved in using any ionic liquid composition containing the cation having more than 4 carbon atoms and the anion containing carboxylate compounds. Moreover, anther prior art Bratescu et al. (US 6,306,805) discloses the surfactant compositions containing a mixture of one cationic surfactant. (see col. 26, lines 30-60), and anionic

sulfosuccinates (see col. 35, lines 24-45), which does not show any inkling of using the surfactants in the catalyst composition. Therefore, in the instant case, they are unrelated to each other; they are definitely two different inventions.

Furthermore, M.P.E.P. Section 808.02 gives legitimate reasons for the Examiner to insist on restriction such as the case of separate classification, which indicates that each distinct subject has attained recognition in the art as a separate subject for the inventive effort, and also a separate field of search."

The requirement is still deemed proper and is therefore made FINAL.

### Claim Objections

Claim 33 is objected to because of the following informalities: In claim 33, there is no independent claim number which claim 33 can be dependent on. Appropriate correction is required.

## Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 1,3, 7, 10, 12, 16-17,20-21, 23,27,30,43, 50, 52,56, 58, and their corresponding dependent claims are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1, 3, 10, 12, and 56, the phrases "more than 4 carbon atoms" and "five or more carbon atoms", and "y is greater than 0" are recited. This expression is vague and indefinite because the specification does not elaborate what the upper limit range for the phases "more than 4 carbon atoms", "five or more carbon atoms", "y is greater than 0" can be for the claim. Therefore, an appropriate correction is required.

In claim 7, the chemical formula" —CH2—CH(CH2CH3)(CH5CH2-CH3). is recited. However, this expression is vague and indefinite because the part of the formula, "CH5" is chemically impossible in the chemical formula. Therefore, an appropriate correction is required.

In claims 1,23, 27, and 30, the phrases "substituted ---alkyl or alkenyl groups", "substituted ---alkylene group", "substituted" are recited. This expression is vague and indefinite because in the absence of the specific moieties intended to effectuate modification by the term "substituted", it renders the claim in which it appears indefinite in all occurrences wherein applicants fails to articulate by chemical name, structural formula or sufficiently distinct functional language, the particular moieties applicants regards as those which will facilitate substitution, requisite to identifying the composition of matter claimed. Therefore, an appropriate correction is required.

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In claims 16-17, 20-21, and 50, the term "hydrocarbon" is recited. The expression is vague and indefinite because the specification does not elaborate what is meant by the term "hydrocarbon". The term "hydrocarbon" may mean that a compound consisting of carbon and hydrogen, but there are numerous hydrocarbons known in the organic chemistry; there is uncertainty as to what kind of "hydrocarbon" can be applied for the process. Therefore, an appropriate correction is required.

In claims 25 and 32, the chemical abbreviation "BMIM" is recited. The term "BMIM" is vague and indefinite because the specification does not elaborate what is meant by the term "BMIM" Therefore, an appropriate correction is required.

In claim 43, the term "containing" is recited. The expression is vague and indefinite because it would mean that there are other components besides tungsten atom; there is uncertainty as to what other compounds are present in the product.

Furthermore, It is well-settled that the term "containing" do not exclude the presence of other ingredients than the one recited. Ex parte Muench, 79 USPQ 92 (PTO Bd. App. 1948). Therefore, an appropriate correction is required.

In claims 52 and 58, the term "derivative" is recited. This expression is vague and indefinite because the specification does not elaborate what is meant by the term "derivative." Therefore, an appropriate correction is required.

#### Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- 1. Claims 1-7, 16-17,20-21, 39-41 and 56 are rejected under 35 U.S.C. 102(b) as being anticipated clearly by Longley et al (US 4,480,119).

Longley et al discloses the followings (see page 957):

where R-O- is the radical of a C6-C20 aliphatic monohydric alcohol, or of an ethoxylated or propoxylated alkyl phenol in which there are at least one but not more than 3 nuclearly attached alkyl groups not more than 2 of which containing from 5 to 12 carbon atoms and the said such other alkyl group, or groups, as may be present, containing 1 to 3 carbon atoms, and in which the number of oxyethylene (-C<sub>2</sub>H<sub>4</sub>O) groups is from 1 to 12, or the number of propoxy (-C<sub>3</sub>H<sub>6</sub>O) groups is from 1 to 4; and wherein the terminal -CH-2-CH2OH group is derived from ethylene oxide; and M is a cation selected from the group of alkali metals (including ammonium), alkaline earth metals, and water-soluble organic amines. Most desirably, in the novel compounds of our present invention, R is alkyl containing from 8 to 15 carbon atoms.

It is particularly desirable that the novel sulfosuccinate compounds of our present invention be marketed and used in the form of the aforementioned types of salts, that is, where M is formula (I) is an alkali metal (which term is here used to mean sodium potassium, lithium and ammonium), or alkaline earth metals, namely, calcium, magnesium, strontium and barium; or, as noted above, water-soluble organic amines. These latter, which most advantageously are lower molecular weight amines, may be selected from a wide group. typical examples of which are dimethylamine; diethylamine, triethylamine; propylamine; monoisopropylamine, diisopropylamine, triisopropylamine, and commercial mixtures of said isopropylamines; butyl amine, amyl amine; monoisopropanolamine, diisopropanolamine, triisopropanolamine and commercial mixtures of said isopropanolamines; ethanolamines such as monoethanolamine, diethanolamine, triethanolamine, and commercial mixtures thereof; polyamines such as aminoethyl ethanolamine, ethylenediamine, diethylenetriamine, hydroxyethyl ethylenediamine, and hexamethylenediamine; hexylamine; cyclohexylamine; dimethylbenzyl-amine, benzylamine; morpholine; etc. Such salts can be prepared from sodium or potassium salts of the novel sulfosuccinate compounds of our present invention by known metathesis techniques.

(see col. 1, lines 12-59).

The aforesaid compounds are useful in various fields where surfactant or wetting-out properties are a desideratum such as, for instance, detergents, emulsifiers, penetrating agents, stabilizing agents, dispersants, emollients, and the like.

(see col. 2 ,lines 6-10) .

Furthermore, one of the examples is the following compound:

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(see col. 6, # 4). This is identical with the claims.

2. Claims 1-7, 16-17,20-21, 39-41 and 56 are rejected under 35 U.S.C. 102(b) as being anticipated clearly by Groote et al. (US 2,072,085).

Groote et al discloses a petroleum emulsion compound :

Di-octyl maleate is prepared and reacted with tri-ethanolamine in the presence of water and sulfur-dioxide, with continued passage of sulfur dioxide until the tri-ethanolamine salt of sulfosuccinic acid di-octyl ester is formed. (see page 4 ,lines 32-37).

This is identical with the claims.

This is identical with the claims.

3. Claims 1-7,16-17,19-20, 22-24,39-40,43, and 50 are rejected under 35 U.S.C. 102(b) as being anticipated clearly by Kissa (US 4,063,889).

Kissa discloses the followings (see from col. 2, line 47 to col. 3, line 22):

This invention provides an exhaustion process for dyeing unmodified or acid-modified polyester fibers comprising:

A. introducing said fibers into a dyebath containing:

1. a chlorinated hydrocarbon solvent, with the proviso that in the case of the acid-modified polyester fibers from 0.01 to 0.10% based on the total weight of the dyebath of water must also be present,

2. from 0.01 to 1% based on the total weight of the dyebath of a water-insoluble salt of a cationic dye and an alkyl sulfosuccinate anion of the formula

3. from 0.05 to 1.0% based on the total weight of the dyebath of at least one low-molecular weight carboxylic acid,

4. 1 to 1.5 moles per mole of water-insoluble sulfosuccinate salt (2) of a solvent-soluble quaternary ammonium salt of an arylsulfonic acid of the formula

$$R_1$$
 $R_1$ 
 $R_1$ 
 $R_3$ 
 $R_7$ 
 $R_7$ 

wherein R<sub>1</sub> and R<sub>2</sub> are alkyl; R<sub>3</sub> and R<sub>4</sub> are alkyl or penzyl; or R<sub>3</sub> and R<sub>4</sub> together form a heterocyclic ring containing the nitrogen atom; or R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> together form a pyridinium ring; and wherein the R groups conain a total of from 12 to 40 carbon atoms and Ar is an tryl group substituted with from 1 to 3 substituents elected from the group consisting of H, Cl, Br, NO<sub>2</sub>, C<sub>14</sub>alkyl, C<sub>14</sub>alkoxy, CO<sub>2</sub>C<sub>14</sub>-alkyl, CO<sub>2</sub>C<sub>2</sub>H<sub>4</sub>OH and COCH<sub>3</sub>, and

# The bis(2-ethylhexyl)sulfosuccinate salt of dye 3 having the formula

(see col. 12, ex. 8). This is identical with the claims.

4. Claims 43, 50, and 52 are rejected under 35 U.S.C. 102(b) as being anticipated clearly by Takimoto et al. (US 5,125,968).

Takimoto et al discloses a recording liquid for ink jet recording containing the following compounds :

wherein each of R<sup>3</sup> and R<sup>4</sup> is a C<sub>6-16</sub> alkyl or alkenyl group, and M is Na or NH<sub>4</sub>, (see col. 1, lines 55-61)

wherein R<sup>6</sup> is a C<sub>6-16</sub> alkyl or alkenyl group, and M is Na or NH<sub>4</sub>,

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(see col. 2, lines 1-7). Furthermore, the following examples are described below:

This is identical with the claims.

## Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

- 1. Determining the scope and contents of the prior art.
- 2. Ascertaining the differences between the prior art and the claims at issue.
- 3. Resolving the level of ordinary skill in the pertinent art.
- 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-13, 16-17, 20-35, 37, 39-42, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bratescu et al (US 6,306,805).

Bratescu et al discloses the surfactant compositions containing a mixture of one cationic surfactant (see col. 26, lines 30-60):

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$$\begin{bmatrix} R_1 \\ I \\ R_2 - N - R_3 \end{bmatrix} X^*$$

where  $R^1$ ,  $R_2$ , and  $R_3$  are independently ethyl, methyl or benzyl;  $R_4$  is an alkyl group having an average of from about 8 to about 18 carbon atoms (preferably 8 to 16 carbon atoms); and X is an a suitable ion including but not limited to halogen, sulfate, methosulfate, ethosulfate, tosylate, acetate, phosphate, nitrate, sulfonate, or carboxylate. Additionally, the alkyl  $R_4$  group can be a straight, branched, mid-chain branched or cyclic alkyl group.

Other quaternary ammonium compounds and amine salt compounds include those of the above general formula in the form of ring structures formed by covalently linking two of the radicals. Examples include imidazolines, imidazoliniums, and pyridiniums, etc., wherein said compound has at least one nonionic hydrophile-containing radical as set forth above. Specific examples include 2-heptadecyl-4,5-dihydro-1H-imidazol-1-ethanol, 4,5-dihydro-1-(2-hydroxyethyl)-2-isoheptadecyl-1-phenylmethylimidazolium chloride, and 1-[2-oxo-2-[[2-[(1-oxoctadecyl)oxy]ethyl]amino]ethyl]pyridinium chloride. Additionally, usefully polymerizable surface active agents include those of the above general formula in the form of ring structures formed by covalently linking two of the  $R_1$ - $R_4$  groups.

and anionic sulfosuccinates shown below (see col. 35, lines 24-45):

Suitable auxiliary anionic sulfosuccinates include those having the formula

where

X and Y are the same or different and are selected from the group consisting of

R and R(CH<sub>2</sub>CH<sub>2</sub>O)<sub>x</sub>, where x has an average value from about 1 to about 30;

R is  $C_8-C_{22}$  alkyl;

and M is an counterion.

Auxiliary anionic sulfosuccinate surfactants are preferably selected from the group consisting of the  $C_8-C_{22}$  sulfosuccinates. Most preferably, the auxiliary anionic sulfosuccinate surfactants is a mono- $C_{10}-C_{16}$  alkyl sulfosuccinate such as disodium laureth sulfosuccinate (STEPAN-MILD® SL3, commercially available from Stepan Company, Northfield, Ill.)

Furthermore, the total concentration of combined cationic, anionic and other surfactants is from 3 % to 40 % by wt based on the total wt of the composition (see col. 7, lines 10-15).

The instant invention ,however, differs from the prior art in that the claimed composition contains at least 55 wt % of an ionic liquid comprising a cation and an anion.

Concerning the % difference between the current invention and the prior art composition, the claimed ranges ( at least 55 wt % ) and prior art (40 % )do not overlap but are close enough that one skilled in the art would have expected them to have the similar properties. Furthermore, the prior art has offered guidance that the composition

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may contain from 5 to 90 % water and/or solvent (see col. 42 ,lines 31-34). Therefore, it would have been obvious to the skilled artisan in the art to be motivated to modify the desired concentration of the ionic surfactants by routine experimentations. This is because the skilled artisan in the art would expect such a manipulation to be feasible as guidance shown In the prior art (see col. 7 ,lines 10-15).

6. Claims 27-28, 36, 38, and 40 are rejected are rejected under 35 U.S.C. 103(a) as being unpatentable over Quack et al (US 4,150,216).

Quack et al discloses the hair treatment agents in the followings (see col. 18, lines 37-68):

The quantitative proportion of sulfo group-containing polyesters used in accordance with the invention in the hair-treatment agents can vary, depending on the desired effect from approximately 0.1 to approximately 10% but preferably from 0.5 to 4%, calculated on the weight of the prepared formulation.

The preparation of the hair-treatment agents according to the invention, which depending on the composition, is concerned with, for example, solutions, dispersions, creams, oils or emulsions, is carried out in a manner known per se by mixing the components at room temperature or, in special cases, such as for example in the case of emulsions, optionally with the action of heat.

The following Examples are to illustrate the invention but in no way represent a limitation.

The following abbreviations are used in the Examples:

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IPA=isophthalic acid

DMI=isophthalic acid dimethyl ester

DMT=terephthalic acid dimethyl ester

SIM=5-sodimsulfonato-isophthalic acid dimethyl ester

K-SIM=5-potassiumsulfonato-isophthalic acid dimethyl ester

SPO=5-sodiumsulfonatopropoxy-isophthalic acid dimethyl ester

TPA=terephthalic acid

TMSA=trimellitic acid anhydride

MA=maleic acid anhydride

DEG=diethylene glycol

TEG=triethylene glycol

TMP=trimethylol propane

sodium sulfosuccinic acid diethyl ester
4-sodium sulfophthalic acid diethyl ester
4-sodium sulfophthalic acid dimethyl ester
4-ammonium sulfophthalic acid dimethyl ester
2-sodium sulfoterephthalic acid diethyl ester

5-sodium sulfoisophthalic acid dimethyl ester (see col. 13, lines 63-68 and col. 14, line 1).

The instant invention ,however, differs from the prior art in that the claimed compound is an isomer to the prior art compound; the claimed composition contains at least 55 wt % of an ionic liquid comprising a cation and an anion.

With respect to the isomeric relationship between them, It is well established that position isomers are prima facie structurally obvious even in the absence of a teaching to modify. The isomer is expected to be prepared by the same method and to have generally the same properties. This expectation is then deemed the motivation for preparing the position isomers. This circumstance has arisen many times. See: *Ex parte Englehardt*, 208 USPQ 343, 349; *In re Mehta*, 146 USPQ 284, 287; *In re Surrey*,

138 USPQ 67; Ex Parte Ullyot, 103 USPQ 185; In re Norris, 84 USPQ 459; Ex Parte Naito, 168 USPQ 437, 439; Ex parte Allais, 152 USPQ 66; In re Wilder, 166 USPQ 545, 548; Ex parte Henkel, 130 USPQ 474; Ex parte Biel, 124 USPQ 109; In re Petrzilka, 165 USPQ 327; In re Crownse, 150 USPQ 554; In re Fouche, 169 USPQ 431; Ex parte Ruddy, 121 USPQ 427; In re Wiechert, 152 USPQ 249, In re Shetty, 195 USPQ 753.

For example, "Position isomerism has been used as a tool to obtain new and useful drugs" (Englehardt) and "Position isomerism is a fact of close structural similarity" (Mehta, emphasis in the original). See also MPEP 2144.09, second paragraph.

Concerning the % difference between the current invention and the prior art composition, the claimed ranges ( at least 55 wt % ) and prior art (10 % )do not overlap but are close enough that one skilled in the art would have expected them to have the similar properties. Furthermore, the prior art has offered guidance that the concentration of the sulfo composition may vary depending on the desired effect (see col. 18, lines 37-40). Therefore, it would have been obvious to the skilled artisan in the art to be motivated to modify the desired concentration of the ionic surfactants by routine experimentations. This is because the skilled artisan in the art would expect such a manipulation to be feasible as guidance shown In the prior art (see col. 18, lines 37-40).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taylor Victor Oh whose telephone number is 571-272-0689. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cecilia Tsang can be reached on 571-272-0562. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jughi: Sh 3/18/8